

**THE ARB BORD OF HEALTH SPECIALIZATIONS
SCIENTIFIC COUNCIL OF ANAESTHESIA**

**FIRST EXAM – PAPER TWO
16 SEPTEMBER 2014
12 – 2 P.M**

NAME:

NUMBER:

CENTER:

1. A 63-year-old man presents for an elective laparoscopic cholecystectomy. He is obese, has angina at rest, and chronic obstructive pulmonary disease (COPD).

Which of the following would be his ASA classification?

- A. ASA I
- B. ASA II
- C. ASA III
- D. ASA IV
- E. ASA V

2. With his neck extended, mouth open, and tongue protruded, the patient's uvula is not visible. His airway should be classed as which of the following?

- A. Mallampati 1
- B. Mallampati 2
- C. Mallampati 3
- D. Mallampati 4
- E. Cormack 2

UK 3. A Nitrogen washout curve is used to measure:

- A. Anatomical dead space
- B. Physiological dead space
- C. Vital capacity
- D. Even ^{uneven} ventilation of different areas of the lung
- E. Diffusion capacity

4. The normal response to surgery includes all of the following EXCEPT:

- A. A decrease in urine volume
- B. A decrease in the urinary excretion of sodium
- C. A decrease in plasma cortisol level
- D. An increase in the urinary excretion of nitrogen
- E. An increase in the urinary excretion of potassium

UK 5. Regarding Intermittent porphyria all of the following are true EXCEPT:

- A. Is autosomal recessive
- B. Can present with autonomic dysfunction
- C. Can present with abdominal pain and no other signs
- D. Can present with psychosis
- E. Can be triggered by ethanol

6. All of the following are causes of central cyanosis in the immediate postanaesthetic recovery period EXCEPT:

- A. Shivering
- B. Replacement of blood by crystalloid fluids
- C. Malignant hyperthermia
- D. Diffusion Hypoxia
- E. Low cardiac output

7. Awareness during anaesthesia occurs less frequently in which of the following type of surgery:

- A. Cardiac surgery with cardiopulmonary bypass
- B. Thoracic surgery with single lung ventilation
- C. Anesthesia for obese patients
- D. Obstetric anesthesia
- E. Anesthesia for major trauma patients

8. A common immediate problem of laryngoscopy and intubation is:

- A. Hypertension
- B. Dysrhythmias in more than 50 % of patients
- C. Dislocation of the arytenoid cartilages
- D. Bronchospasm
- E. Surgical emphysema due to pharyngeal trauma.

9. You are confronted with an unexpected difficult ventilation and intubation of a pregnant patient. The parturient is anesthetized, but you were unable to intubate the trachea and mask ventilation is inadequate.

What is your first choice for this situation?

- A. Insertion of an esophageal-tracheal Combitube,
- B. Insertion of laryngeal mask airway (LMA),
- C. Transtracheal jet ventilation (TTJV),
- D. Emergent cricothyrotomy or tracheostomy.
- E. Insertion of Fastrach LMA with cricoid pressure

10. Which of these mechanisms results in decreased blood pressure?

- A. Increased production of angiotensin II
- B. Increased secretion of aldosterone
- C. Increased vasopressin secretion
- D. Increased secretion of atrial natriuretic hormone
- E. Increased secretion of epinephrine

11. Which of these structures deliver blood to the left atrium?

- A. Coronary sinus
- B. Superior vena cava
- C. Inferior vena cava
- D. Pulmonary veins
- E. Pulmonary arteries

12. Regarding MET, the standard metabolic equivalent, which one is TRUE?

- A. MET is the O₂ consumption at rest =3.5 mL/kg/min
- B. One MET for a 70 kg person 250 mL O₂/min
- C. An example of 4 METs is two flight of stairs
- D. Example of 10 METs is strenuous activity such as jogging, basketball, swimming
- E. All correct

13. Which of the following statements regarding arrhythmias is false?

- A. In first degree heart block, the PR interval is prolonged
- B. In second degree heart block the QRS complex does not occur after every P wave.
- C. Third degree heart block is indicated by an abnormally long QRS complex following the P wave
- D. An ECG with a sawtooth baseline indicates atrial flutter.
- E. In atrial fibrillation the baseline is irregular.

14. A 21-year-old athlete has laryngospasm following extubation after undergoing repair of an inguinal hernia during general anesthesia. Bag and mask ventilation relieves the patient's symptoms. In the PACU 15 minute later, he has dyspnea; SpO₂ is 85% at an FiO₂ of 0.40

Which of the following is the most likely cause?

- A. Atelectasis
- B. Decreased cardiac output
- C. Pulmonary edema
- D. Pulmonary embolism
- E. Residual paralysis

15. Which of the following factors will slow the induction of anesthesia in patients receiving volatile anaesthetics?

- A. Addition of 70% nitrous oxide
- B. Increased cardiac output
- C. Increased minute ventilation
- D. Low blood/gas solubility coefficient
- E. Previous pneumonectomy

16. A 58-year-old woman with rheumatoid arthritis and hyperactive gag reflex requires awake intubation prior to cervical spine stabilization. Which of the following regional nerve blocks is most appropriate?

- A. Deep cervical plexus
- B. Glossopharyngeal nerve
- C. Hypoglossal nerve
- D. Superior laryngeal nerve
- E. Trigeminal nerve

17. A 16-year-old patient who sustained trauma is being resuscitated. In deciding whether to infuse lactated Ringer's solution or albumin, which of the following is true?

- A. At one hour, both will remain in the intravascular compartment to an equal extent
- B. Both have zero risk for hepatitis transmission
- C. Both will decrease hydrogen ion transmission
- D. The glomerular filtration rate will be higher with infusion of albumin
- E. Lactated Ringer's solution causes a greater intracranial pressure

18. Compared with healthy persons, patients with myasthenic syndrome (Eaton-Lambert) have increased:

- A. Resistance to vecuronium
- B. Response to neostigmine during reversal of muscle paralysis
- C. Sensitivity to succinylcholine *to both*
- D. Susceptibility to development of malignant hyperthermia
- E. Weakness with repetitive activity

19. Which of the following is associated with the application of a transdermal fentanyl patch?

- A. Achievement of a peak plasma level within one hour
- B. Continued uptake after patch removal
- C. Dose-independent plasma clearance
- D. Tachyphylaxis when used for cancer pain
- E. Naloxone-resistant toxicity

20. Which of the following statements concerning the management of diabetes mellitus during pregnancy is true?

- A. Insulin requirements remain essentially unchanged during pregnancy
- B. Maternal blood glucose concentration of 200 mg/dL is optimal
- C. Maternal hyperglycemia may cause neonatal acidosis
- D. Neonatal hyperglycemia is common
- E. Infants delivered under general anesthesia have lower Apgar scores than those delivered under spinal Anesthesia

21. An adult patient with atrial fibrillation develops pulseless tachycardia while undergoing synchronized electrical cardioversion. Which of the following is the most appropriate management?

- A. Intravenous administration of adenosine
- B. Intravenous administration of a bolus of lidocaine followed by electrical cardioversion
- C. Immediate repeat synchronized cardioversion at the same energy level
- D. Immediate repeat synchronized cardioversion at twice the previous energy level
- E. Unsynchronized electrical cardioversion

22. Fentanyl-induced bradycardia is:

- A. Independent of the speed of injection
- B. Independent of the dose
- C. Caused by direct inhibition of adrenal catecholamine release
- D. Caused by vagal stimulation
- E. Caused by direct SA node depression

23. Fresh frozen plasma is indicated in each of the following situations EXCEPT:

- A. After rapid transfusion of 1.5 L CPD-stored red blood cells
- B. Antithrombin III deficiency
- C. Replacement of factor VIII
- D. Reversal of warfarin effect
- E. Thrombotic thrombocytopenia purpura

24. The primary purpose of denitrogenation prior to anesthetic induction is to:

- A. Blunt hypoxic pulmonary vasoconstriction
- B. Improve ventilation and perfusion matching
- C. Increase contribution of a second gas effect to rate of induction
- D. Increase oxygen reserve in the functional residual capacity
- E. Maximize arterial oxygen content

25. Pethidine, all the following are true EXCEPT:

- A. Causes more miosis than morphine
- B. Is metabolized to active substances with analgesic properties
- C. Has a shorter duration of action than morphine
- D. Possesses atropine-like activity
- E. Has some local anaesthetic activity

26. Regarding Naloxone, which one is FALSE?

- A. Is an agonist at kappa receptors
- B. Is an antagonist at mu receptors
- C. Reverses ventilatory depression due to morphine
- D. May precipitate opiate withdrawal symptoms
- E. May cause pulmonary oedema

27. Significant agonist activity at opioid receptors occurs with:

- A. Clonidine
- B. Pentazocine
- C. Xylocaine when used for migraine
- D. Ketamine
- E. Naltrexone

28. Non-depolarising neuromuscular blockers are potentiated by all EXCEPT:

- A. Lithium
- B. Diazepam
- C. Trimetaphan
- D. Magnesium
- E. Suxamethonium

29. Amitriptyline in overdose causes all EXCEPT:

- A. Cardiac arrhythmias
- B. Hypotension
- C. Restlessness
- D. Metabolic acidosis
- E. Jaundice

30. Regarding Neostigmine, all of the following are true EXCEPT:

- A. Is eliminated entirely by the liver
- B. Does not cause foetal bradycardia when given to a pregnant woman
- C. Causes miosis
- D. Is a quaternary ammonium compound
- E. Can cause late bradycardia

31. Regarding Phenytoin, all of the following are true EXCEPT:

- A. Shows first-order elimination kinetics
- B. Induces enzymes
- C. Causes hypotension
- D. Usually has no effect on vitamin B2
- E. Has a half-life of about 4 hours

32. All the following are indications for pre-operative measurement of serum urea and electrolytes in patients admitted for elective surgery EXCEPT:

- A. Digoxin therapy
- B. Well controlled insulin dependent diabetes
- C. Recurrent urinary tract infaction
- D. Diuretic therapy
- E. All patients over fifty years old

33. Hazards of anaesthesia in patients with chronic renal failure include all of the following EXCEPT:

- A. Left ventricular hypertrophy
- B. Pericarditis
- C. Hypertension
- D. Enhanced carotid sinus activity
- E. Cardiac tamponade

34. One of the following is considered as low fixed cardiac output:

- A. Aortic stenosis
- B. Constrictive pericarditis
- C. Mitral stenosis
- D. Cor pulmonale
- E. Digoxin toxicity

35. All of the following are nephrotoxic EXCEPT:

- A. Angiotensin converting enzyme inhibitors
- B. Non-steroidal anti-inflammatories
- C. Halothane
- D. Amino glycosides
- E. Radio contrast agents

36. The first function to be lost during the onset of spinal anaesthesia is:

- A. Touch
- B. Motor power
- C. Temperature sensation
- D. Vibration
- E. Autonomic activity

37. Regarding Midazolam, all of the following are true EXCEPT:

- A. Has an elimination half-life of 6 hours
- B. Imidazole ring contributes to its water solubility at low pH.
- C. Metabolites are excreted mostly in the urine
- D. Can have a prolonged effect if given with erythromycin
- E. Well absorbed after IM injection with peak level achieved in 90 minutes

38. Regarding Barbiturates, all of the following are true EXCEPT:

- A. Activate the reticular activating system in the brain stem
- B. More potently affect the function of nerve synapses than axons
- C. Potentiate the action of GABA
- D. Induction doses cause a decrease in blood pressure and an increase in heart rate
- E. The phenyl group in Phenobarbital is anticonvulsant

39. Which drug is an imidazole derivative?

- A. Thiopental
- B. Ketamine
- C. Propofol
- D. Etomidate
- E. Methohexitol

40. Regarding Ketamine, all of the following are true EXCEPT:

- A. Is a structural analogue of phenylcyclidine.
- B. Inhibits polysynaptic reflexes in the spinal cord.
- C. Dissociates the thalamus from the limbic system.
- D. Is useful for IM induction in uncooperative patients.
- E. Has no active metabolites

41. The speed of uptake of an anesthetic agent from the lung:

- A. Is temperature dependent
- B. Is proportional to the minimum alveolar concentration
- C. Is proportional to the blood/gas solubility
- D. Is proportional to the cardiac output
- E. Is not proportional to the minute ventilation

42. Concerning the clinically used opioids, All are true EXCEPT:

- A. Pethidine is effective in reducing shivering from diverse causes
- B. Fentanyl is metabolized to norfentanyl
- C. Fentanyl has a large volume of distribution
- D. Sufentanil has a clinical potency 100 times that of morphine
- E. Remifentanil does not accumulate even after prolonged infusion

43. Regarding Cisatracurium; one is TRUE:

- A. Undergoes no urinary excretion.
- B. 0.2 mg/kg offered acceptable intubating conditions at 60 seconds.
- C. Has an elimination half life of 20 – 30 min
- D. Produces more laudanosine than equipotent dose of Atracurium.
- E. Is less potent than Atracurium.

44. All of the following characterize Sevoflurane EXCEPT:

- A. It does not increase heart rate
- B. Induction of anesthesia and rate of recovery are fast
- C. It causes significant skeletal muscle relaxation
- ✓ D. Metabolism of Sevoflurane does not produce compounds toxic to the kidneys
- E. It does not produce marked respiratory depression in clinical concentrations

45. The MAC (minimum alveolar concentration) is reduced in:

- A. Febrile subjects.
- B. Female sex.
- C. Chronic alcoholism.
- D. Prolonged duration of anaesthesia.
- ✓ E. Hypothyroidism.

46. One of the following is true of inhalational anaesthetic agents:

- A. Halothane is irritant to the airways.
- B. Isoflurane is a structural isomer of Halothane.
- C. Sevoflurane is fluorinated ether.
- ✓ D. Desflurane is a halogenated hydrocarbon.
- ✓ E. Enflurane is halogenated methylethyl ether.

47. Systemic vascular resistance is LEAST changed with:

- A. Isoflurane
- B. Sevoflurane
- C. Desflurane
- D. Enflurane
- ✓ E. Halothane

48. All of the following drugs may cause urinary retention EXCEPT:

- A. Morphine
- B. Ephedrine
- C. Atropine
- D. Amitriptyline
- ✓ E. Ketamine

49. All of the following are true for Tramadol EXCEPT:

- A. Its analgesic potential is believed to be mediated weakly through its effect on the mu-opioid receptor
- B. Has effect on 5-HT3 and noradrenergic receptors
- C. Has antiemetic effect
- D. Produces antinociception
- ✓ E. Has an inhibitory effect on shivering

50. In first order kinetics, all of the following are true EXCEPT:

- A. The rate of excretion is proportional to the concentration of the drug present in the body at any time
- B. The plasma level decay is exponential
- C. Excretion must be purely renal
- D. Excretion must not be affected by administration of another drug
- E. 95% of the drug is eliminated in about three time constants

51. All of the following are true about barbiturates EXCEPT:

- A. The most commonly used barbiturate in anesthesia is Sodium Thiopental
- B. They are Barbituric acid derivative
- C. Hypnotic potency is determined by substitution at the Carbon atom number 5 of the Barbituric acid ring
- D. Its lipid solubility is enhanced by replacing the Oxygen with sulfur at the second Carbon atom of the Barbituric acid ring
- E. In clinical concentration, they affect preferentially the nerve axons

52. The intravenous induction dose of anesthesia for Midazolam is:

- A. 7-10 $\mu\text{g}/\text{kg}$
- B. 10-20 $\mu\text{g}/\text{kg}$
- C. 50-100 $\mu\text{g}/\text{kg}$
- ✓ D. 100-300 $\mu\text{g}/\text{kg}$
- E. 500-1000 $\mu\text{g}/\text{kg}$

53. Concerning context-sensitive half-time:

- A. It depends on the concentration of the drug in the plasma when the infusion is stopped.
- B. It is the inverse of the rate constant for excretion times.
- C. After two context-sensitive half-times, the plasma concentration will be one quarter of its value at the end of infusion.
- D. The context-sensitive half-time for Remifentanil is shorter than that for propofol.
- E. It will increase linearly in proportion to the duration of infusion.

54. The MAC of isoflurane is decreased by:

- A. Ethanol-induced enzyme induction.
- B. Hyperventilation to a paCO_2 of 25 mmHg.
- C. Chronic anemia to a hematocrit of 20%.
- ✓ D. Decreased body temperature to 34° Celsius
- E. Is the same as halothane

55. H2-receptor antagonists are of benefit in the treatment of all of the following conditions EXCEPT:

- A. Uncomplicated duodenal ulcer
- B. Zollinger-Ellison syndrome
- C. Mendelson's syndrome
- D. Uncomplicated gastric ulcer
- E. Reflux oesophagitis

56. Which of the following muscle relaxants is eliminated the most by renal excretion?

- A. Pancuronium
- B. Vecuronium
- C. Pipecuronium
- D. Rocuronium
- E. Doxacurium

57. The most common reason for patients to rate anaesthesia with etomidate as unsatisfactory is:

- A. Postoperative nausea and vomiting
- B. Pain on injection
- C. Recall of intubation
- D. Myoclonus
- E. Postoperative hiccups

58. Which of the following vasopressor agents increases systemic blood pressure indirectly by stimulating the release of norepinephrine from sympathetic nerve fibres and directly by binding to adrenergic receptors?

- A. Dobutamine
- B. Ephedrine
- C. Epinephrine
- D. Phenylephrine
- E. Methoxamine

59. The most important reason for the more rapid onset and shorter duration of action of fentanyl compared with morphine is the difference in:

- A. Volume of distribution
- B. Hepatic clearance
- C. Renal clearance
- D. Lipid solubility
- E. Protein binding

60. The unique advantage of rocuronium over other non depolarizing muscle relaxants is its:

- A. Short duration of action
- B. Metabolism by pseudocholinesterase
- C. Onset of action
- D. Lack of need for reversal
- E. Lack of potentiation with aminoglycoside antibiotics

61. In which of the following situations is succinylcholine most likely to cause severe hyperkalaemia?

- A. 24 hours after a right hemisphere stroke
- B. 14 days after a severe burn injury.
- C. 24 hours after a mid-thoracic spinal cord transection
- D. 2 days with severe abdominal infection
- E. Chronic renal failure

62. Use of vasoconstrictors is least effective in prolonging anaesthetic action with which one of the following local anaesthetics?

- A. Lidocaine
- B. Ropivacaine
- C. Procaine
- D. Prilocaine
- E. Amethocaine

63. Which of the following is true concerning metabolism of local anaesthetics?

- A. All local anaesthetics are metabolized in the liver
- B. Amide local anaesthetics are metabolized by Hoffman degradation
- C. Ester type local anaesthetics undergo hydrolysis by pseudocholinesterase
- D. Risk of ester toxicity decreases in neonates
- E. Ester type local anaesthetics undergo hydrolysis by non specific esterase

64. Which of the following inhalational agents causes reduced blood pressure and heart rate:

- A. Isoflurane
- B. Halothane
- C. Desflurane
- D. Nitrous oxide
- E. Sevoflurane

65. Which one of the following intravenous anesthetic agents has the least effect on cardiovascular and respiratory systems?

- A. Propofol
- B. Thiopental
- C. Etomidate
- D. Midazolam
- E. Fentanyl

66. Regarding Propofol, all of the following are true EXCEPT:

- A. It is extensively used for sedation in the intensive care unit
- B. It has high clearance
- C. Significant accumulation may occur
- D. It is used for total intravenous anaesthesia
- E. Bradycardia can be a side effect

67. Regarding Dexmedetomidine, which one of the following is TRUE?

- A. It is an alpha 1 antagonist
- B. It has elimination half life of 20 minutes
- C. It produces profound analgesia and sedation without respiratory depression
- D. It acts on both alpha 1 and 2 equally
- E. It causes tachycardia

68. Regarding Esmolol, all of the following are true EXCEPT:

- A. It has elimination half life of 20 minutes
- B. It is a beta 1 selective blocker
- C. It is metabolized by esterases in blood
- D. It may cause hypotension
- E. It is useful in management of supraventricular tachycardia

69. Regarding Dobutamine, all of the following are true EXCEPT:

- A. It is a synthetic inotrope
- B. It has very dominant beta 1 effect
- C. It has a small Beta 2 effect
- D. It stimulates dopaminergic receptors
- E. It causes vasodilation

70. Regarding Noradrenaline, all of the following are true EXCEPT:

- A. It has predominant alpha 1 action
- B. It has no effect on Beta receptors
- C. Clinically it is used in septic shock
- D. It is an extremely potent vasopressor
- E. It is given by infusion

71. Regarding Ephedrine, all of the following are true EXCEPT:

- A. It is a bronchodilator
- B. It has alpha and beta effect
- C. It is used in hypotension following spinal anaesthesia in obstetrics
- D. It has longer duration of action than adrenaline
- E. It decreases MAC of anaesthetics

72. Regarding Glycopyrrolate, all of the following are true EXCEPT:

- A. It is a quaternary ammonium compound
- B. It cannot cross the blood-brain barrier
- C. It may produce delirium
- D. It is an anticholinergic drug
- E. It is contraindicated in patients with narrow angle glaucoma

73. Regarding the drugs used in advanced life support, all of the following are true EXCEPT:

- A. Adrenaline is given 1 mg IV every 3-5 minutes
- B. Vasopressin 40 units IV can replace second dose of adrenaline
- C. Vasopressin 10 units IV every 5 minutes
- D. Amiodarone 300 mg IV is given after third shock
- E. All of the above drugs can be given intraosseous

74. Postoperative hypoxia at 15 minutes may be due to all of the following EXCEPT:

- A. Mild hypercapnia
- B. Nitrous oxide diffusion.
- C. Central depression
- D. Increased V/Q scatter.
- E. Shivering.

75. CO₂ narcosis is associated with all of the following EXCEPT

- A. Papilloedema
- B. Raised JVP
- C. Thready pulse
- D. Discoloration of the skin
- E. Muscle twitching

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